REMARKS/ARGUMENTS

Claim 1, 3, 5, 6, 9, 10, 12, 14, 15 and 18 were presented for examination.

Claims 1, 9, 10 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mohindra (U.S. Patent No. 7,035,341) in view of Mohindra (U.S. Patent No. 6, 744,829).

Applicant has previously amended the set of claims to replace the terms "analog filters" by "analow lowpass filters". Since Mohindra uses allpass to compensate, the distinction between lowpass and allpass is important. One of the most important features is the use of the cutoff frequency of a lowpass filter to adjust the frequency dependent IQ imbalance. The use of lowpass filters rather than allpass filters to adjust the baseband frequency dependent phase imbalance is not obvious. In particular, it is not obvious that adjusting the cutoff frequency has the effect of a linear phase correction as in Mohindra (341) Fig.6 but without the use of an allpass filter. The adjustment of the cutoff frequency of the lowpass filter is not anticipated by Mohindra (341) as evidenced by the inclusion of an adjustable allpass filter in **addition** to the lowpass filter.

The advantage of using the lowpass filter according to the present invention is that all I/Q receivers typically require lowpass filters for anti-aliasing before the A/D converter. Accordingly, allpass filters are not required in the present invention. Since Mohindra requires the use of allpass filtering in addition to lowpass filtering, this results in an obvious increase in complexity, which is not the case in the present invention.

Besides, Mohindra clearly does not comprehend the favorable attributes (in term of IQ correction) of adjusting the cutoff frequency of the lowpass filter.

The use of cross-correlation of I and Q signals to generate an adjustment signal is shown explicitly in Mohindra (829), but is applied as a correction signal to an RF LO generator, not a baseband filter. In Mohindra (341), two separate RF signals are generated at different points in the calibration process to produce a correction signal, requiring a DSP to store the signals and compute the correction value. In the present invention, I and Q signals are injected at baseband and the cutoff frequency of one lowpass filter is adjusted until the cross-correlation is zero. The calibration according the present invention can be implemented without using a DSP and the cross-correlation could be computed with two comparators and an XOR gate or even an analog mixer and integrator.

Indeed, the present invention presents the advantage of finding (through analysis) that cutoff frequency of lowpass filters can be used to correct IQ phase imbalance. It is possible to have a situation wherein the filters in fact have the same cutoff frequency, but still have significant phase imbalance. By adjusting the cutoff frequency of one filter away from the other, this imbalance can be reduced. Adjusting for filter mismatch (i.e. cutoff frequency mismatch) is not the same as adjusting for phase imbalance. Furthermore, it is not implied that when the cutoff frequencies are equal, the IQ phase imbalance is minimized.

Therefore, Claims 1 and 10 have been previously amended to specify that the cross correlation feedback signal adjusts the adjustable characteristic for minimizing a phase difference between the I output tone and the Q output tone in addition to the reduction of the frequency dependent I/Q phase error.

Claims 3, 5, 6, 9 and claims 12, 14, 15, 18 which are respectively dependent on allowable claims 1 and 10 are therefore also allowable.

In light of the above, it is respectfully submitted that the present application is in condition for allowance, and notice to that effect is respectfully requested.

While it is believed that the instant response places the application in condition for allowance, should the Examiner have any further comments or suggestions, it is respectfully requested that the Examiner contact the undersigned in order to expeditiously resolve any outstanding issues.

Respectfully submitted,

/Tum Thach/

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